Fig.1

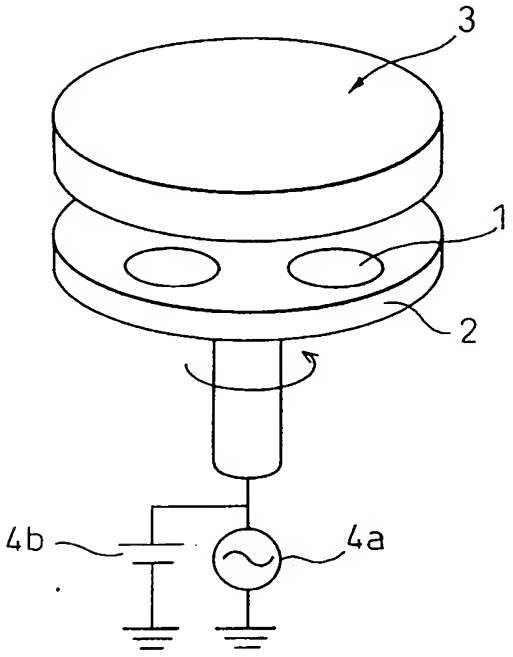


Fig.2

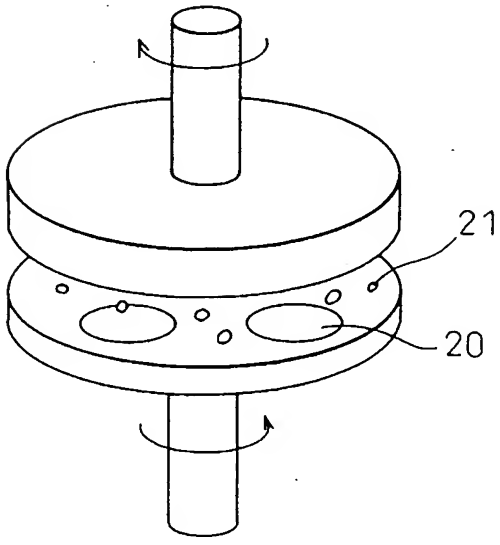


Fig.3

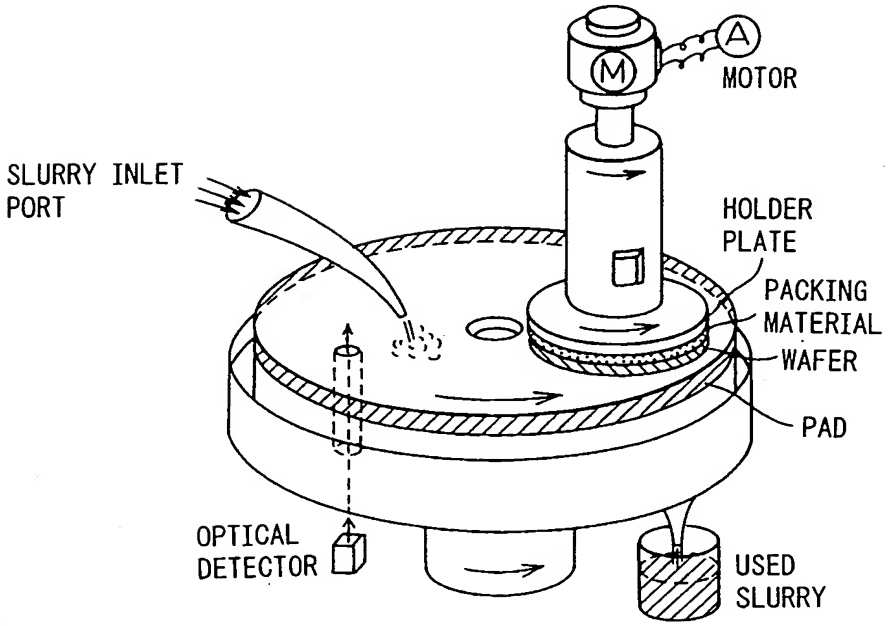

A
M
MOTOR
SLURRY INLET PORT
HOLDER PLATE
PACKING MATERIAL
WAFER
PAD
OPTICAL DETECTOR
USED SLURRY

Fig.4

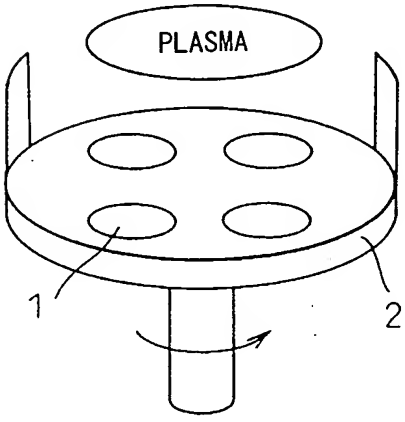
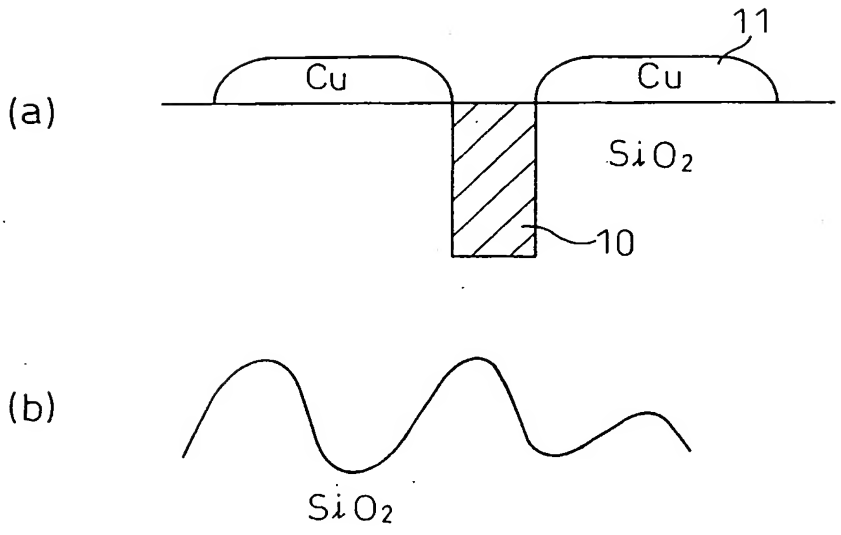

PLASMA
1
2

Fig.5



10/550020

Fig.6

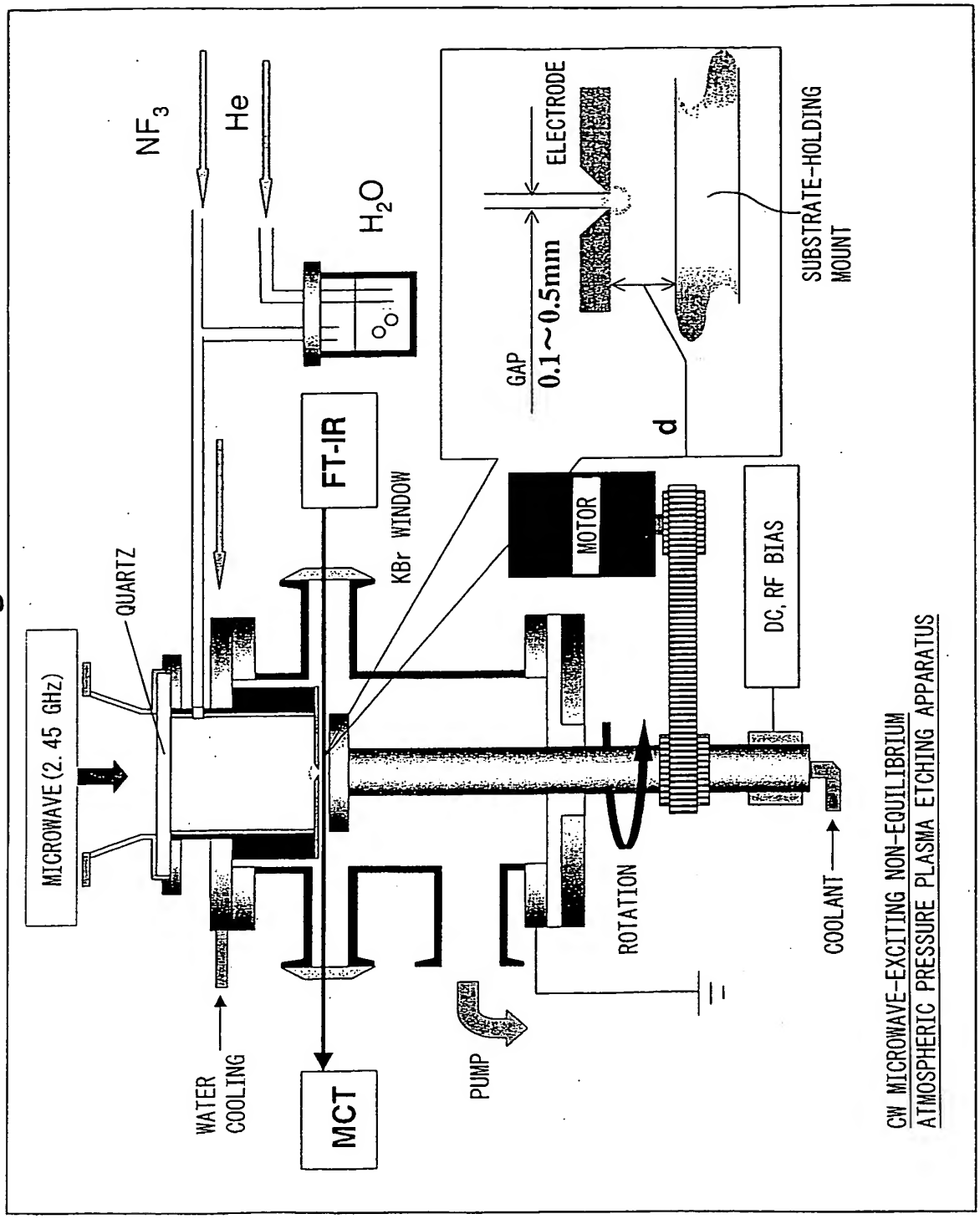
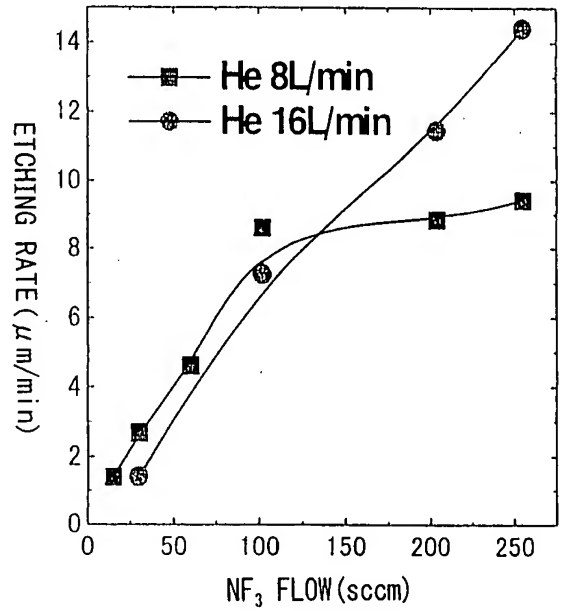


Fig.7

SiO_2 HIGH-SPEED ETCHING

POWER:500W, PRESSURE:760Torr, H_2O BUBBLING
SUBSTRATE TEMP. :18℃, GAP:0.2mm



ETCHING RATE,
14 μm/min

H_2O POURING RATE VARIES DEPENDING UPON THE He CARRIER GAS FLOW RATE

- H_2O POURING RATE

  (He8L/min) < (He16L/min)

- WHEN He 16L/min, THE ETCHING RATE IS DETERMINED BY NF_3 FLOW RATE

- WHEN He 8L/min, AND NF_3 FLOW RATE IS 100sccm OR MORE, THE ETCHING RATE IS SATURATED DUE TO THE LACK OF H FROM H_2O

FEEDING RATES ARE BALANCED BETWEEN H FROM H_2O AND F FROM NF_3

Fig.8

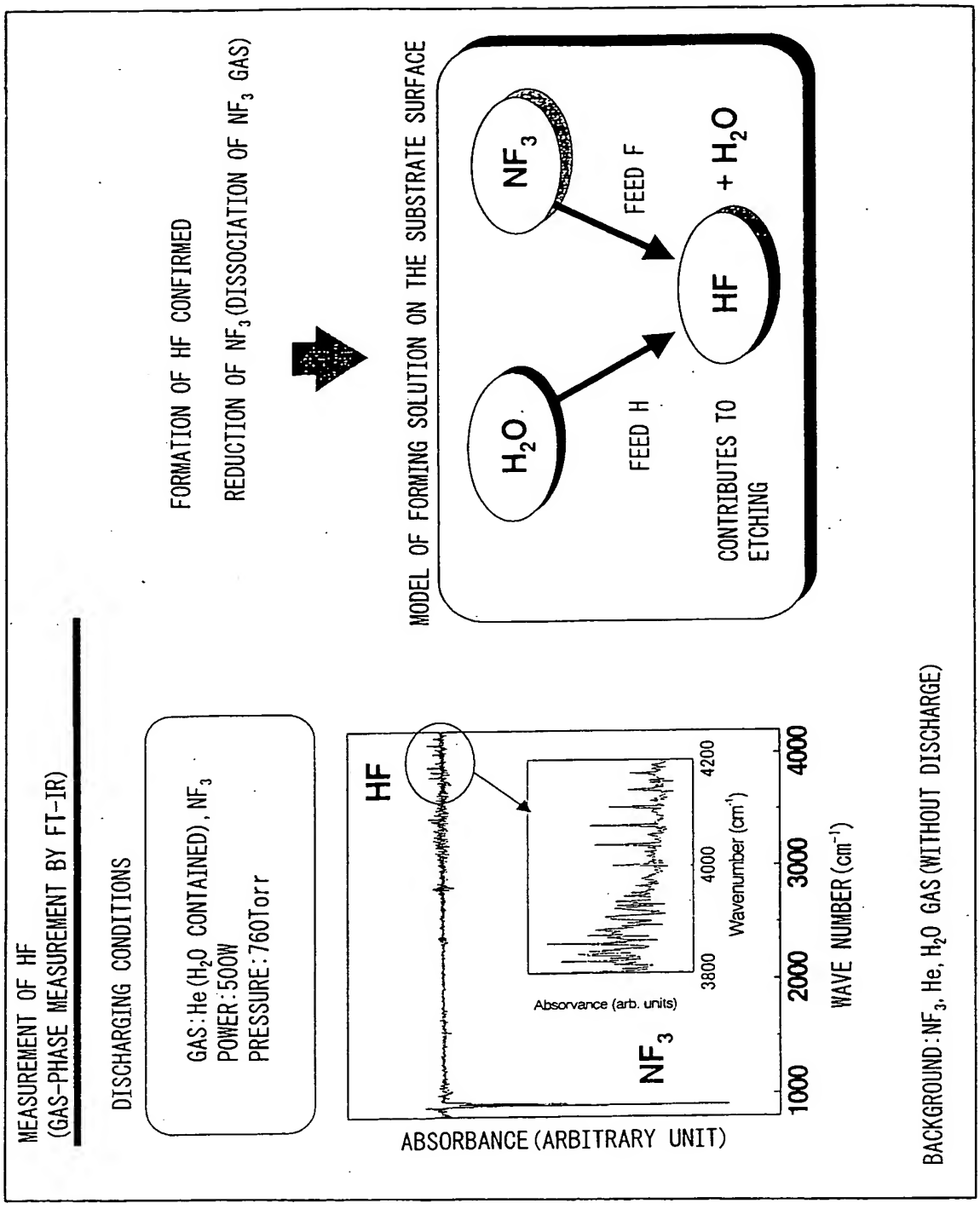
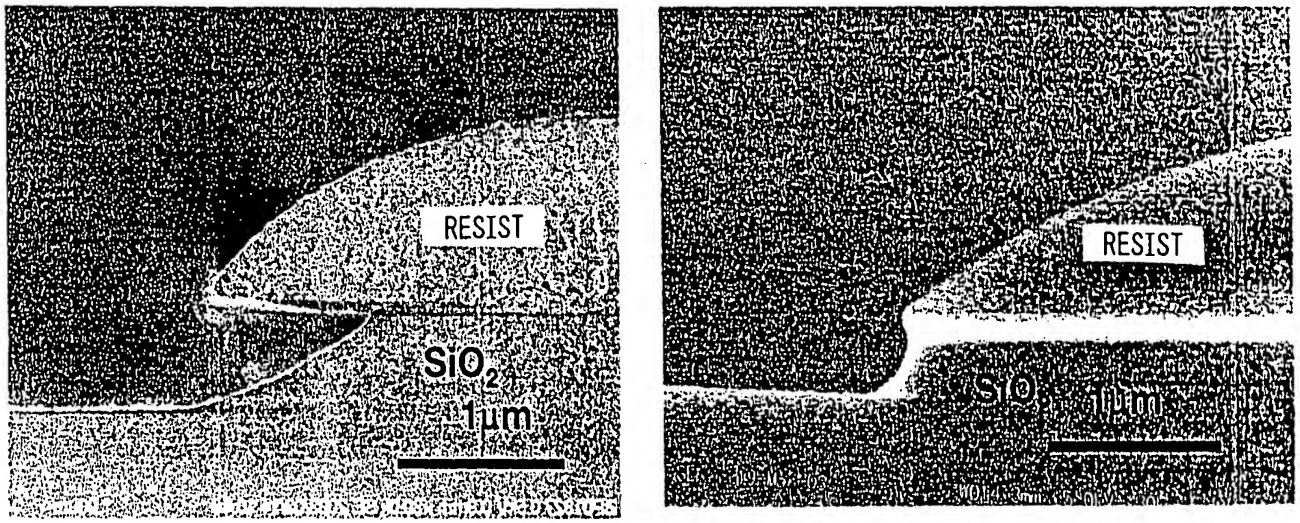

MEASUREMENT OF HF
(GAS-PHASE MEASUREMENT BY FT-IR)
DISCHARGING CONDITIONS
GAS:He(H2O CONTAINED), NF3
POWER:500W
PRESSURE:760Torr
HF
NF3
Absorvance (arb. units)
3800
4000
4200
Wavenumber (cm-1)
1000
2000
3000
4000
WAVE NUMBER (cm-1)
ABSORBANCE (ARBITRARY UNIT)
BACKGROUND:NF3, He, H2O GAS (WITHOUT DISCHARGE)
FORMATION OF HF CONFIRMED
REDUCTION OF NF3 (DISSOCIATION OF NF3 GAS)
MODEL OF FORMING SOLUTION ON THE SUBSTRATE SURFACE
H2O
NF3
FEED H
FEED F
HF
+ H2O
CONTRIBUTES TO
ETCHING

Fig.9

PATTERN ETCHING USING RESIST MASK

GAS: He (H_2O CONTAINED), NF_3
SUBSTRATE-ELECTRODE DISTANCE: 5mm
POWER: 500W
PRESSURE: 760Torr

GAS: He (H_2O CONTAINED), NF_3, C_4F_8
SUBSTRATE-ELECTRODE DISTANCE: 5mm
POWER: 500W
PRESSURE: 760Torr



·VERY HIGH SELECTION RATIO RELATIVE TO THE RESIST

·VERTICAL PROCESSING

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